Measuring Matter

Notes

http://www.brainpop.com/science/matterandchemistry/measuringmatter/

Learning Objective: **In writing, SWBAT differentiate between boiling point, melting point, and freezing point, and give examples, using academic language.**

Mass the amount of matter in an object

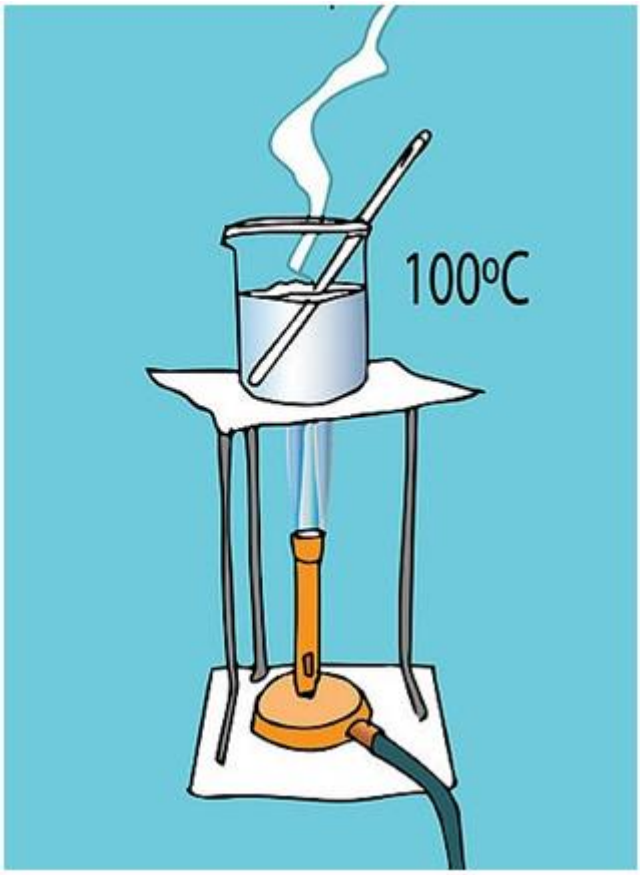
Balance a tool used to measure mass

Volume the amount of space something occupies

Graduated cylinder — a tool used to measure the volume of a liquid or solid

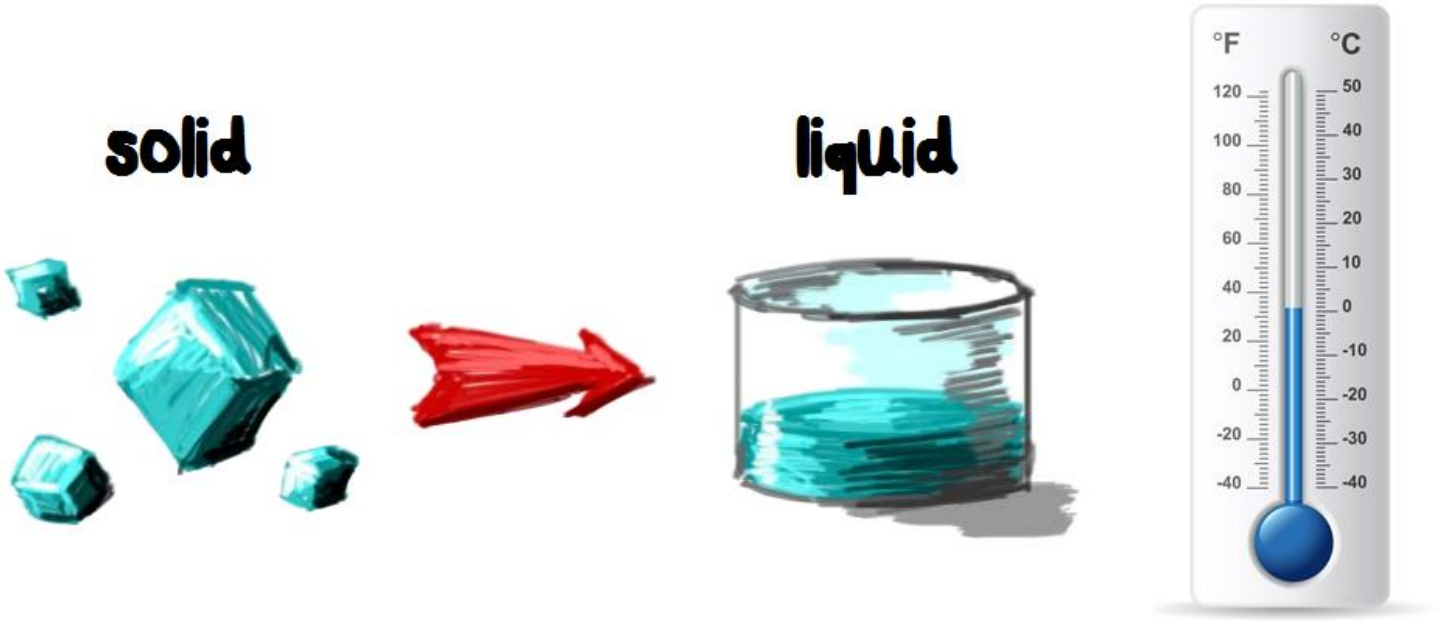
Boiling point — the temperature at which a liquid changes into a gas

Example: water changes to water vapor at 100°C



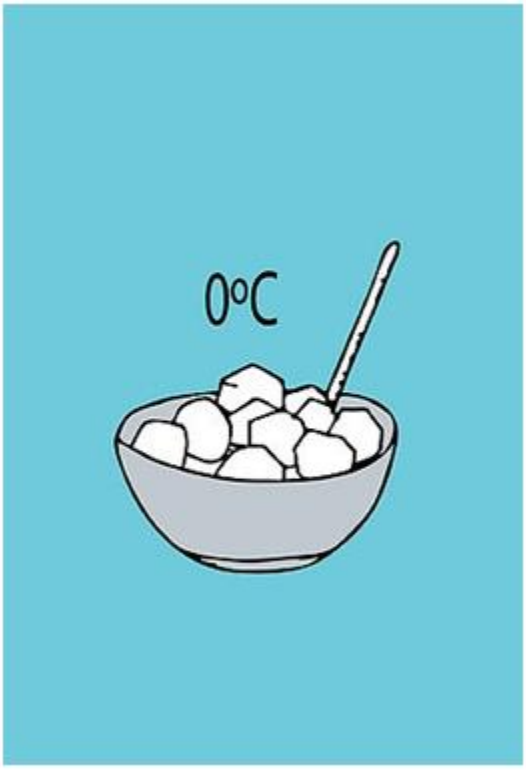
Melting point — the temperature at which a solid changes to a liquid

Example: ice changes to water at 0°C



Freezing point the temperature at which a liquid changes to a solid

Example: water changes to ice at 0°C



Thermometer a tool used to measure temperature

Measuring Matter
Check Your Understanding

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1. What do you notice about the freezing and melting point of water?	*I notice that the freezing and melting point of water are both _____ .*
2. What properties of matter can we measure?	*The properties of matter we can measure are _____ , _____ , and _____ .*
3. How can we measure matter?	*We can measure _____ with a _____ , _____ with a _____ and _____ with a _____ .*
4. What kinds of matter have you seen melt, freeze or boil? Where did you see them?	*I have seen _____ .*

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Science Skill

Using Numbers to Compare

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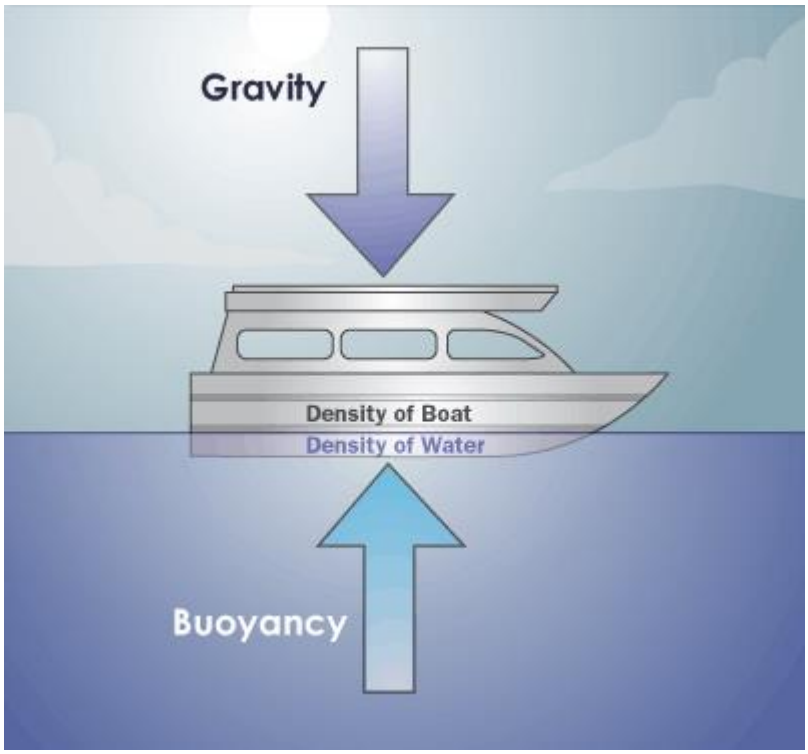
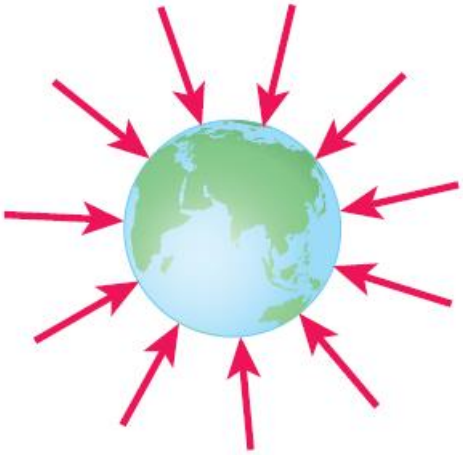
1. Which substance has a higher melting point than water?	_____ *has a higher melting point than water.*
2. Which substance has a lower boiling point than water?	_____ *has a lower boiling point than water.*

Learning Objective: **In writing, SWBAT compare and contrast buoyant force and gravity, and explain why an object sinks or floats, using academic language.**

Buoyant force	the upward force on an object in a liquid
Gravity	pushes down on the object

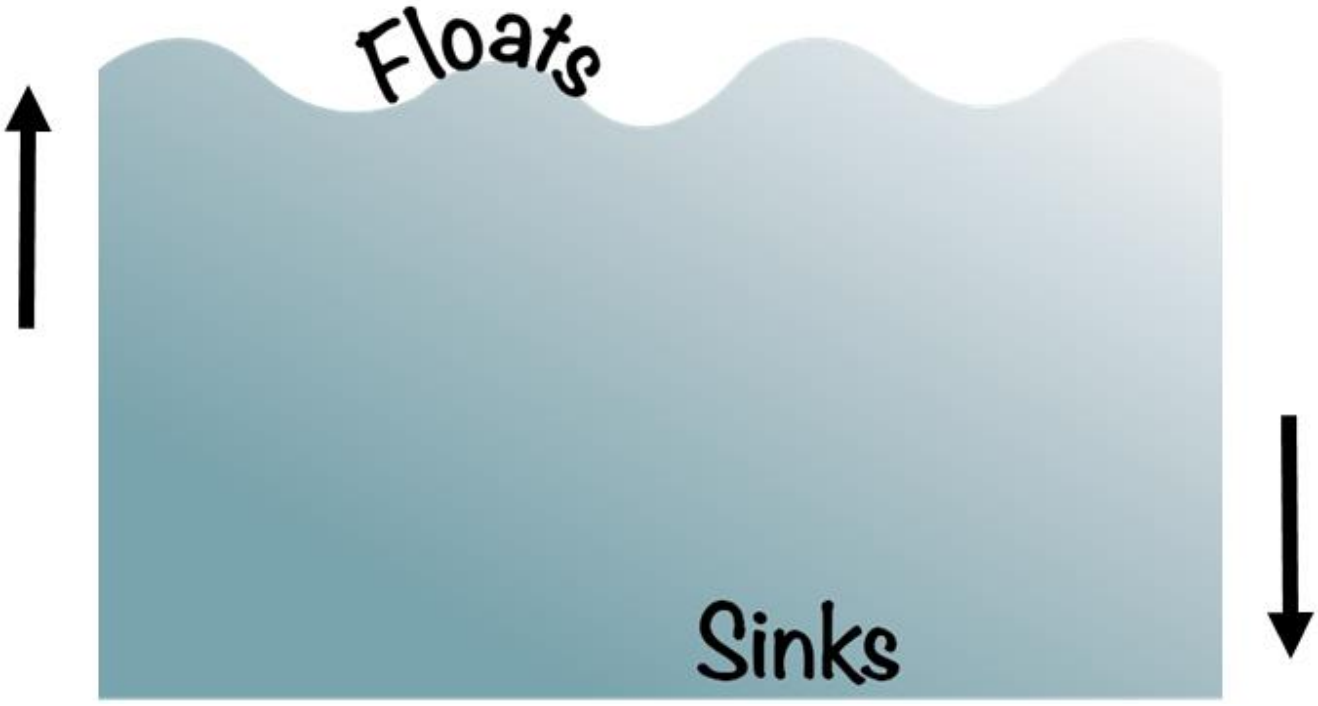


Gravity — a force of attraction between objects



An object floats — if the buoyant force is greater than the gravitational force

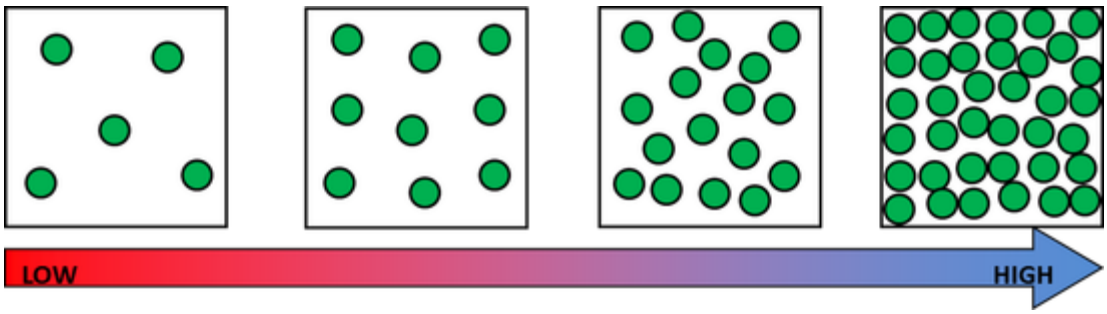
An object sinks — if the gravitational force is greater than the buoyant force



Learning Objective: **In writing, SWBAT explain the concept of density, and calculate the density of objectives using the formula D = m/v, while using academic language.**

Density the relationship between an object's mass and its volume

It is a measure of the amount of mass in a specific amount of volume



Formula to calculate density

$$density = \frac{mass}{volume}$$

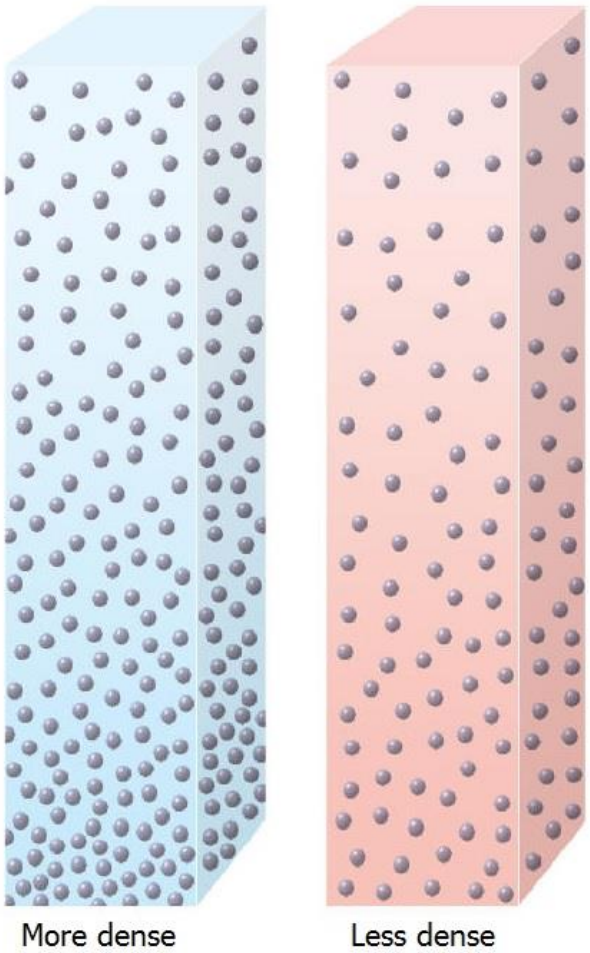
or, in short form:

$$d = \frac{m}{v}$$

Density is expressed as grams per cubic centimeter:

- g/cc
- g/cm^3

Different materials have different masses for the same volume



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Check Your Understanding

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1. What happens when you heat ice? What happens when you heat water?

When you heat ice, the ice _____ and changes to _____ . When you heat water, the water _____ and changes to _____ .

2. Why does a rock sink in water?

A rock sinks in water because _____ .

3. If a rock has a mass of 84 g and a volume of 12 cc, what is its density?

If a rock has a mass of 84 g and a volume of 12 cc, its density is _____ .

4. If one object sinks in water and another object floats, which one has a greater density?

If one object sinks in water and another object floats, the object that _____ has a greater density.